

B737NG Alerting Issues – In flight (hidden) cabin fire/smoke

1. Initiating Condition: Ignition from short circuit in electrical wiring hidden behind cabin

Type	Alert or cue	Threshold for alert or cue to be presented	Confusion regarding alert or cue	Other Issues with regard to Alert or Cue	When alert is inhibited/suppressed or when cue is masked	How alert or cue is terminated
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Visual Alerts	None					
Aural Alerts	None					
Tactile Alerts	None					
Visual Cues	None until smoke reaches the flight deck	Smoke visible	Smoke cue not necessarily indicative of the extent/seriousness of the fire especially if fire source is remote from flight deck; confusion among smoke source (a/c vs. cabin) and smoke vs. humidity/vapor	Cue may not be presented to pilots	Extent/seriousness of the fire may be masked by being hidden behind panels	(Cue will not be eliminated because the fire is not extinguishable)
Aural Cues	None until flight attendants call pilots on interphone or cargo supernumeraries advise pilot		Flight attendants may not know or communicate the extent/seriousness of the fire	Cue may not be presented to pilots	Extent/seriousness of the fire may be masked by being hidden behind panels	(Cue will not be eliminated because the fire is not extinguishable)
Tactile/ Somatic Cues	None					
Olfactory Cues	None until smoke is smelled		Smoke cue not necessarily indicative of the extent/seriousness of the fire especially if fire source is remote from flight deck	Cue may not be presented to pilots		

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1. Initiating Condition: Ignition from short circuit in electrical wiring hidden behind cabin – Cont.

Expected Pilot Response(s)

- Perform appropriate cabin fire/smoke procedure (SMOKE, FIRE OR FUMES).
- Perform appropriate smoke removal (SMOKE OR FUMES REMOVAL) procedure if/as directed by the SMOKE, FIRE OR FUMES procedure.
- Perform emergency descent as specified by NNP.
- Prepare for emergency landing, off-airport if necessary, as specified by NNP.
- Land immediately as specified by NNP.

Possible sources of confusion with regard to pilot response(s)

- Pilots have incomplete information about the extent/seriousness of the fire and its progression, and thus need to decide on appropriate procedures with incomplete/ambiguous information, including which fire/smoke procedures, whether/when to perform an emergency descent, and when/how to shortcut normal procedures to expedite landing.
- Pilots have incomplete information about the extent/seriousness of the fire and its progression, and thus need to decide on whether/when/where to land; for example, pilots do not know how much time is available to get the airplane on the ground and thus have difficulty evaluating the risk/benefit of an off-airport landing and even how much time to spend slowing down for landing.
- History of false fire/smoke detector alarms can cause pilots to downplay or discount a valid warning.

How does pilot know condition is resolved/recovered?

- Pilots may receive information from flight attendants who are fighting the fire, including gaining access to hidden areas by removing panels.
- Situation cannot be resolved until aircraft has landed and crew performs emergency evacuation.

Issues with regard to multiple concurrent non-normal conditions

- Pilots may receive alerts/cues from failure conditions secondary to fire damage; it will be unclear to them to what extent they need to respond to these and how to prioritize their response.